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FM AMCONSUL SAO PAULO  
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RUEHCV/AMEMBASSY CARACAS 0556  
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E.O. 12958: N/A

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SUBJECT: INFRASTRUCTURE IN BRAZIL: THE TIETE RIVER

#### Summary

1. (U) The Brazilian Transportation Ministry hosted the first Bilateral Brazil-U.S. Inland Waterways Navigation Conference August 28-30 in Brasilia that brought together experts to discuss the challenges and opportunities presented by inland waterways. The U.S. delegation included representatives of the Coast Guard, the Army Corps of Engineers, and private industry. Likewise, the Brazilian delegation was comprised of representatives from several industries and different levels of government. The event, sponsored by the Brazilian National Agency for Waterway Transportation (ANTAQ) and USSOUTHCOM, looked at the overall waterborne transportation infrastructure in Brazil and culminated with a trip down the Tiete River in the state of So Paulo in order to look at the potential benefits and hurdles involved with improving infrastructure along this waterway that serves as an important transportation link for agricultural producers. While improvements in waterborne transportation would benefit agricultural producers, geographical, political, and environmental concerns combine to make some hard choices for the future of this waterway.  
End Summary

#### Transportation Infrastructure in Brazil

2. (U) The combined team first looked at the overall state of Brazil's waterborne transportation infrastructure by reviewing the most recent ANTAQ report published in 2005. The report outlines in detail the volume and type of goods that go through the country's ports. The report indicated that four out of the top nine Brazilian ports, in terms of volume, are located in the So Paulo consular district (composed of the states of Sao Paulo, Matto Grosso do Sul,

Parana, Rio Grande do Sul, and Santa Catarina). These ports include Santos and Sao Sebastiao in Sao Paulo state, Paranagua in Parana, and Rio Grande in Rio Grande do Sul, and the report cited the Tiete River as the primary inland waterway used to transport goods to these four ports. While these ports move a large percentage of total Brazilian exports (the top nine ports together handles over 82% of Brazilian exports in 2005, and Santos alone accounts for about one fourth of Brazil's trade and 40 percent of merchandise moved by container), weak port infrastructure has been a drain on the growth of exports from these ports and represents a considerable cost of doing business in Brazil.

¶3. (U) Transportation infrastructure development faces a number of challenges. While there is general agreement that infrastructure deficiencies impede Brazil's competitiveness, development of roads, railways, ports, and waterways remains controversial for environmental and other reasons. For instance, major projects such as the proposed construction of two hydroelectric dams on the Madeira River along the border with Bolivia in the Amazon region have been slowed by environmental licensing requirements as well as cross-border concerns with Bolivia. Brazil's environmental licensing agency, IBAMA, has denied permits to other proposed dam construction projects to the point that President Lula himself has expressed impatience with Environment Minister Marina Silva and IBAMA. Environmental scrutiny has thus slowed river construction across the board and has brought much negative attention to the impact of dam construction. At the same time, the Lula administration's Growth Acceleration Program (PAC), a multi-year public works program designed to advance economic development by promoting

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incentives for infrastructure expansion, has helped make commercial transportation development a hot topic in Brazil. Due to this attention, investors are becoming interested in financing major construction projects. The PAC calls for a "multi-modal" transportation system designed to help move goods to port and market. As a result, inland waterway transportation has grown in significance, giving encouragement to prospective investors.

¶4. (U) Waterway transportation has proven to be much more cost-effective than transporting goods on roads, the common practice in Brazil. It costs \$100 to transport a ton of soy beans - Brazil's powerhouse crop - by truck from the interior where they are grown to the Port of Santos for export. Use of waterborne transportation would reduce transportation costs. One river barge can hold 400 truckloads of soy beans reducing the cost per ton of soy bean transported to 30 dollars. Currently, up to one million tons of bulk agricultural products, representing 25% percent of total Brazilian agricultural exports, are taking advantage of the lower transportation costs of waterways like the Tiete a figure that could increase with further development.

#### The Tiete, a Case Study

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¶5. (U) One of Brazil's largest inland waterways, the Tiete River is highly developed for the transportation of bulk agricultural products. The Tiete flows northwest across Sao Paulo state for about 1150 km before emptying into the Parana River, which in turn flows southwards to the Rio de La Plata estuary. The Tiete's source is located in the municipality of Salesopolis in Serra do Mar, only 22km from the Atlantic Ocean, but the geography of the area forces the river to run, anomalously, towards the center of the continent. A total of seven dams have been constructed along the river with each dam containing a lock that makes navigation possible. By the time it reaches the sea, the Tiete-Parana waterway is 3,900 km long.

¶6. (U) The use of the river for transportation has not come without an environmental and social impact on the interior of

Sao Paulo and its inhabitants. In 1992, residents of Guarapiranga pressured the state government into trying to reverse the damage to the river caused by the dams and artificial lakes. With funding from the Inter-American Development Bank, the state launched a program entitled "Projeto Tiete" to respond to these concerns. The purpose of the project is to treat the wastewater that pollutes the river. (Note: The municipality of Guarulhos continues to discharge waste into the river, which is noticeably malodorous as it passes through metropolitan Sao Paulo. End Note.) The program also focuses on monitoring the industries in the vicinity of the river. At present, 1,200 industries have agreed not to discharge their waste into the river and similar programs are being designed to address issues of transportation and construction of dams on the river.

17. (U) ANTAQ is currently re-assessing a 1975 research project proposing a series of 16 dams above Barra Bonita - about 300 km west-northwest of Sao Paulo - to enable barges to carry cargo from further up the Tiete toward port. To date, while a series of locks and dams exist below (west of) Barra Bonita, no dams have been constructed above Barra, and only two appear viable. Engineers argue that the other fourteen proposed dams are too costly and difficult to construct given the significant elevation changes along the part of the river between Barra Bonita and Piracicaba.

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According to engineers' assessments of the 1975 study by the Secretaria de Transportes, the most viable of the proposed

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dams are the Barragem de Tiete and the Barragem Porto Feliz. These are the two proposed dams in closest proximity to the Barra Bonita dam. Construction of these two dams would significantly extend the distance by which goods can be transported along the river, reducing the distance products would have to be transported by road and thus reducing costs.

Other potential options include making significant structural changes on the existing dams; however this would be extremely costly and controversial. It would also involve widening and deepening the Tiete River, a process that proved to be very unpopular when proposed under the state government of Geraldo Alckmin in 2004.

18. (U) Differing geographical and institutional conditions between Brazil and the United States help explain why Brazil today faces many more challenges in developing waterway transportation mechanisms than the United States did in an earlier era. According to the American engineers, dam construction in the U.S. was facilitated by a lack of environmental scrutiny at the time of construction. In addition, because Brazilian rivers such as the Tiete are characterized by large and sudden differences in elevation, engineers must build high dams with very narrow openings to hold back the large quantities of water. U.S. engineers, impressed by the quality of construction at Barra Bonita, commented that these physical constraints dictate a need for more expenditure on repairs and maintenance than a comparable dam in the United States would require. The narrow openings limit the entry of only a few barges at a time, lined up one after another. The average width for a lock in Brazil is 12 meters, whereas the average in the U.S. is 35 meters. Thus, in the U.S., barges enter locks not only one after another but also side by side, often increasing the number of barges transported at one time threefold. One alternative might be to employ individuals who captain single-propelled vessels, as is done in Europe, instead of following the U.S. model of using tow boats and barges. However, Brazilian industries that use the Tiete to transport their goods all have very integrated business models. Each farm and processing plant controls not only its operations but also transportation and other logistics instead of contracting out for these services.

Comment

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¶9. (U) Construction of two additional dams along the Tiete River would significantly reduce the transportation costs for the country's major agricultural producers. To achieve the greatest impact, this would have to occur in tandem with the development of Sao Paulo's railroads as is proposed by the PAC's "multi-modal" transportation system. Geographic barriers, institutional hurdles, and environmental concerns, however, will continue to factor highly in the development of Brazil's waterway infrastructure for both transportation and other purposes. End Comment.

¶10. (U) This cable was coordinated with Embassy Brasilia.

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